



THE ROLE OF PUBLIC AND PRIVATE STAKEHOLDERS IN “SOLVING” HOUSTON’S FLOODING PROBLEM

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The Role of Public and Private Stakeholders in “Solving” Houston’s Flooding Problem

Introduction

This paper addresses the role of both the private sector and the public sector in altering Houston’s current situation relative to flooding. There is a major role for the private sector in fixing the serious problems that all levels of government and the development community, as well as their engineers and lawyers, have created together. It is also worth noting that all residents of Houston and Harris County were complicit in the creation of these problems because we allowed them to happen. It is time for those of us affected by this action to take a role in our future—a role that we must conceive, create, and demand.

In thinking about private sector action, I am reminded of Jesse Jones, a key figure in Houston’s past. Jones is credited with pulling together Houston’s banks and bankers when bank failures were emerging as a key issue following the stock market crash of 1929. As the story goes, Jones became worried about the stability of a couple of local banks and convinced Houston bankers that they needed to set up reserves and not allow any of these financial institutions to fail. That effort kept Houston on stable financial ground during a time when many key regions of the United States suffered major financial losses, and laid the basis for Houston’s success. It was effective private action in the face of a major threat to long-term economic security.

The situation we are currently facing regarding Houston’s flooding is no less important and even more challenging. Clearly, if Houston does not develop an appropriate response to our flooding crisis, economic decline will follow. On the other hand, if we find approaches that help us become the model resilient city of the 21st century, long-term economic success will be ours. But it has to happen NOW. And I fear that our institutions are not up to the task without significant private sector assistance—much like when Jesse Jones came in to pull the community together.

Many actions need to be taken to address the flooding issues that are plaguing Houston. Some are legacy issues stemming from past policies that must be changed. From the outset, it is important to note that many of these policies have been developed over decades, and many of these problems have their origin in decisions made long ago. The important point is the need for concerted action to move forward rather than focusing on past failures or blame. However, we cannot move forward if we are chained to past policies and ideas. We must be open to reconsidering many aspects of the way we handle development and flooding issues in Houston and Harris County.

In order to fix these problems, action will need to be taken by federal, state, or local governments or the private sector. This effort needs to be coordinated, swift, and effective. It needs resolve and vision. And swift action, resolve, and vision often arise from the private sector. That just seems to be how we are wired in this part of the world.

A New Local Nonprofit Organization

One way the private sector can become engaged is through the formation of a nonprofit corporation solely dedicated to moving Houston into the 21st century relative to flooding and resilience thinking.¹ At this time, no nonprofit is specifically focused upon flood resilience or has the independence from current policies and political leadership to be able to make the hard choices that are before us. This new nonprofit will only stay in existence until adequate steps have been taken to address this problem and then will dissolve. The nonprofit is not intended to be an institution but rather, is intended to solve this true public trust issue.

There are several ways that this new nonprofit can be effective. First, the nonprofit is based on a vision of a city that manages rather than attempts to “control” flooding. Houston needs to make room for its bayous and creeks much like the Netherlands has “made room for the river.” The Dutch breakthrough concept recognized that planning and understanding hydrology were as important as dikes and engineered solutions, and that they had to work together. Houston needs green ribbons where space has been opened up for water flow along every bayou system in all parts of town, rich or poor, Anglo or Hispanic or African-American or Asian. This is an equitable approach to the future that involves both buyouts and new policies.

Second, people need first-class information about flooding in Houston, and this nonprofit will provide it. The starting point is “A Guide to Living with Houston Flooding.” As envisioned, this document will describe our flood system, discuss our various watersheds and their problem areas, and help people understand the pluses and minuses of where they might buy property. It should ensure that new homebuyers understand where and what hurricane evacuation zones are, the difference between storm surge flooding and rainfall flooding, the concepts of the 100-year and 500-year flood and why they cannot be depended upon, and other useful information. The intent is to do what the government has not: tell the truth and provide excellent information to help us live with our flooding.

Third, the nonprofit will attempt to implement key flood management concepts set out in an earlier paper titled “Hurricane/Tropical Storm Harvey: Policy Perspectives” that can be found on the Baker Institute website.² Among the 15 suggestions are (1) identifying the areas that did not flood in Harvey; (2) creating a major buyout program for the areas that have flooded multiple times; (3) creating a policy map based on the information from steps 1 and 2 to create policies to create a green infrastructure for the city and a plan for the transitional areas that do not flood as much; (4) taking necessary steps to protect the

¹ For key points of resilience thinking, see Brian Walter and David Salt, *Resilience Thinking: Sustaining Ecosystems and People in a Changing World* (Washington, D.C.: Island Press), 14.
<http://faculty.washington.edu/stevehar/Resilience%20thinking.pdf>

² Download the paper at https://www.bakerinstitute.org/media/files/research_document/03d3e4fe/BI-pub-Blackburn_Harvey-090617.pdf.

The Role of Public and Private Stakeholders in “Solving” Houston’s Flooding Problem

Addicks and Barker reservoirs; (5) honestly evaluating the severity of storms that may be facing us in the future; (6) obtaining more accurate floodplain maps or better concepts for identifying “risk”; (7) reconsideration of the Federal Emergency Management Agency (FEMA) flood insurance program; (8) preserving remaining native prairies and wetlands that can help protect the city by storing rainfall; (9) raising additional money locally to pursue needed projects and buyouts; (10) developing excellent flood warning systems; (11) tightening development controls; (12) expanding the elevation and flood-proofing concepts in our building code; (13) developing better public information about flooding; (14) aggressively pursuing flood reduction concepts, including submission of a permit application for permission to build the “mid-bay” solution; and (15) developing metrics to transparently set out our success and/or failure to provide flood reduction benefits.

Fourth, creative financial concepts can and should be used by our local, state, and possibly federal governments to address flooding. The concept of social impact bonds might be very useful in addressing flooding if we can convince our local governments to become creative. In a social impact bond, an investor advances the money to the government for various actions, such as buying out flooded homes or perhaps building a reservoir, levee, or dike. In return, the private investors are repaid according to the avoided costs from future flood events. In this case, the “social” side of this proposal is that the private sector will realize a different rate of return based upon whether or not the next flood or floods come sooner or later, allowing them to share in the risk of significant capital investments to avoid flood damage. This alternative could work for buyouts, financing the needed third reservoir to protect the Buffalo Bayou/Addicks Reservoir watershed, and/or to fund the construction of the mid-bay surge abatement proposal.

Fifth, this new nonprofit will push for new and creative policies in the local, state, and federal governmental sectors; it will be an independent and trusted source of information, and a catalyst for action. It will work in tandem, if necessary, with an existing political action committee called Houston Voters Against Flooding (HVAF) that was formed many years ago after the White Oak Bayou floods of 1998, 2001, and 2002. HVAF has been dormant for many years, but is available to enter the political arena. Hopefully, that will not be necessary.

The need for the nonprofit is immediate and urgent. Now is the time to make many of these changes—now when Harvey is still fresh and raw in the public and political psyche. The tendency is to forget these events with time. We cannot allow that to happen.

The new nonprofit has not yet been named. If you have ideas for an appropriate name, please send them to me, Jim Blackburn, at jbb@blackburncarter.com. If you want to participate, also email me at jbb@blackburncarter.com and tell me of your interest. We need members. There is strength in numbers. If you are interested, send in your name. We will have an initial formative meeting in the near future.

Professional assistance in organizing and presenting this new nonprofit to the community will be provided by Outreach Strategists led by Mustafa Tameez, a professional with

significant knowledge of how things work in Houston. Our goal to achieve changes in policy; they will be achieved if we unite and act together

Policy Changes That Should Occur

There are policies that can and should be pursued by federal, state and local governments. Again, it is important to note that while certain of these problems are currently situated within the actions and policies of federal, state, and local governmental entities, these actions and policies have unfolded over a long period of time. Current officeholders are not necessarily responsible for the creation of these problems. We all are responsible for fixing them, and we must be able to speak honestly and clearly about these problems and issues. A discussion of these policy issues and the changes that are necessary and desirable can be found in the following paragraphs.

Federal

There are many actions that must be pursued by our congressional delegation and our senators. First and foremost, they must undertake immediate action to address the mess that is the Addicks and Barker reservoirs. These dams have been classified as two of the six most dangerous in the United States, and special operating policies have been developed based upon these findings. We need these dams repaired and restored to first-class condition. We have a right to know just how dangerous these dams are—information that has never been provided. The people whose homes are within the flood pool must be bought out. This land should have been condemned decades ago and never should have been developed. This situation cannot be allowed to continue. Further, Addicks and Barker have lost capacity due to sediment build-up. Excavating material that has been deposited in these reservoirs in their 50-plus years of operation can solve that problem. That should be done. In addition, a congressional hearing should be held on how the U.S. Army Corps of Engineers has handled this issue including the failure to establish a system to warn the public of impending releases from these reservoirs.

Second, Congress is going to have to provide significant funding to assist the Houston area in its recovery and future planning. The highest priority is money for buyouts, primarily through the Federal Emergency Management Agency (FEMA), whose buyout program and operating concepts should be expanded. Another priority is to secure funding for surge protection; Houston and Galveston have not seen a worst-case storm yet, one that threatens the Houston Ship Channel and the Clear Lake area with devastation. Here, the delegation should require full consideration of the mid-bay alternative developed by the SSPEED Center,³ an alternative that offers 95% of the protection provided by the Ike Dike yet costs about \$3 billion compared to the \$10 billion plus figure for the Ike Dike. This

³ “Rice report analyzes new option for hurricane protection,” Rice University news release, September 1, 2015, <http://news.rice.edu/2015/09/01/rice-report-analyzes-new-option-for-hurricane-protection/>. The full report can be found at <http://tinyurl.com/SSPEEDsept1>.

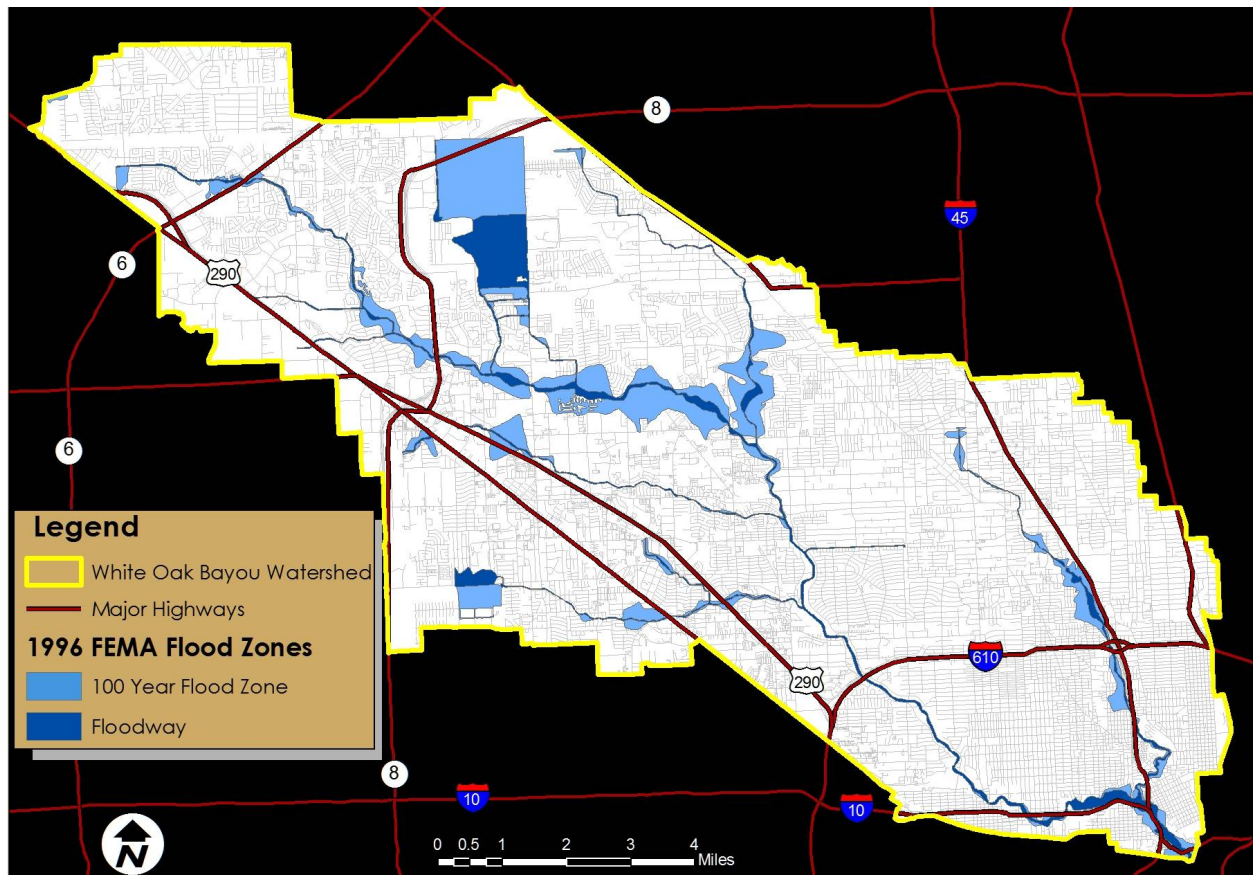
alternative is currently not among the Corps of Engineers’ alternatives being developed to protect the Houston-Galveston area. We have competing financial and construction needs after Harvey. We have to spend our federal funds wisely and, to date, such wisdom has been absent from our thinking.

Third, FEMA should be directed by Congress to make revisions to the federal flood insurance program. The current policy of allowing Harris County to undertake its own floodplain mapping should be suspended and independent analysts should be brought in to evaluate our flooding issues and floodplains. There is no doubt that our 100-year rainfall used to guide construction of roads and buildings and to determine protection levels for industry and hazardous waste is too small; the floodplains are too small because the rainfall amounts they are based on are too small. The 100-year floodplain maps that result from underestimated rainfall totals are not providing an adequate description of the flooding risk in our community. All repairs and reconstruction based on these floodplain maps are essentially obsolete on arrival, a situation that guarantees future flooding. What’s more, FEMA is setting up a huge future federal liability for yet further flooding in Houston. This pattern of continued flooding, rebuilding, and flooding again must change and that starts with FEMA, the agency that underwrites floodplain development.

State

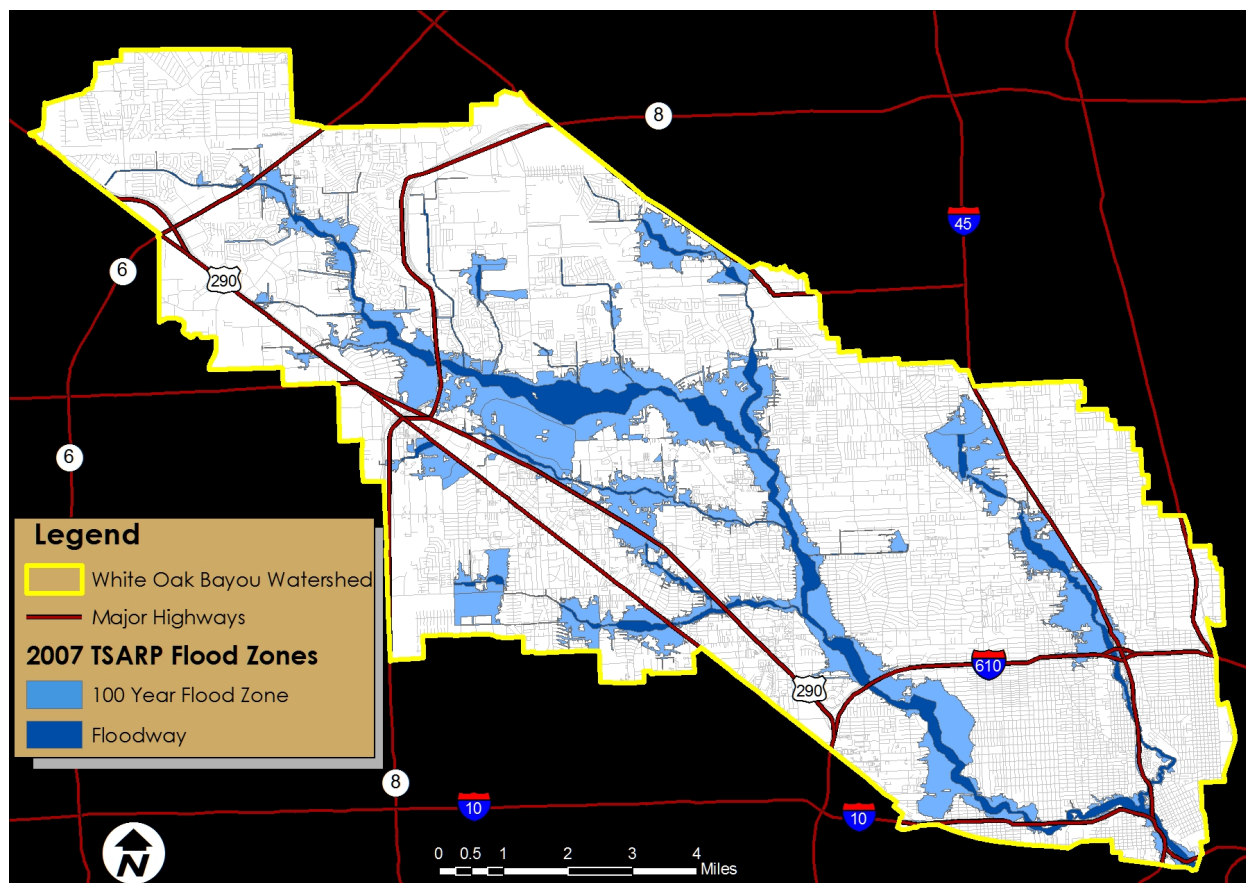
Several actions can and should be undertaken by the state government, mainly through legislation initiated in the next legislative session, given that the State of Texas has a very limited oversight role with regard to flooding and floodplain policies in Houston and Harris County. The first priority is to change Chapter 359 of the Local Government Code. Section 359.079 exempts Harris County from having to construct projects for which it charges developers an impact fee. A situation arising from this provision involved White Oak Bayou, among others, whereby Harris County charged developers an impact fee to be paid in lieu of building a detention pond; this fee was supposed to be used to construct a “regional” detention pond. However, Harris County did not collect enough money and did not build the reservoir—even though Harris County “knew” that the failure to build the reservoir would flood people downstream. This situation is clearly shown in Figures 1 and 2 below. Figure 1 shows the floodplain map that was used during the 1990s. At that time, the flood storage function of the land near Beltway 8 is apparent. This large flood detention area near Beltway 8 was developed and drained, contributing to downstream flooding. Figure 2 shows the remapped floodplain after Tropical Storm Allison. It clearly reveals the downstream changes that occurred in flood distribution. The law that allowed this to happen must be changed. An exemption that allows people downstream to be flooded is not good public policy, and all members of the Texas Legislature are hereby on notice about this problem that must be fixed.

Figure 1. 1996 map showing FEMA 100-year floodplain and floodway on White Oak Bayou.



Source: Courtesy of the author.

Figure 2. 2007 map showing 100-year floodplain and floodway on White Oak Bayou as revised by FEMA after Tropical Storm Allison.



Source: Courtesy of the author.

A second state issue concerns the recent Texas Supreme Court decision in Harris County Flood Control District v. Kerr. Here, the Texas Supreme Court interpreted the Texas Constitution in a manner such that it is virtually impossible for flooded downstream landowners to receive compensation for the “taking” of their private property by the government. This case took away the property rights of downstream homeowners in Harris and other counties on a 5-4 vote that reversed an earlier 5-4 vote that found liability and upheld property rights. Serious politics were at work before the Supreme Court—politics that hurt every homeowner in Harris County, and that supported the policies that underlie Harris County politics. This situation can be changed by clarification of the term “intent”⁴ as used in inverse condemnation cases, either by statute or by allowing a constitutional amendment to be voted on by the people.

⁴ “Texas Supreme Court reverses itself in flooding case,” Texas Municipal League, https://www.tml.org/legis_updates/the-texas-supreme-court-reverses-itself-in-flooding-case.

The Role of Public and Private Stakeholders in “Solving” Houston’s Flooding Problem

A third step the state can take is exploring whether certain engineers working in Harris County and possibly surrounding counties have violated their duty to the public under 22 TAC Section 137.55 of the rules of the Texas Board of Professional Engineers. This rule states that the duty of a licensed professional engineer is to protect the public of the State of Texas. It is not clear exactly what this rule means and how that rule relates to the duty of engineers to their client. This ethical duty is quite different from that of an attorney, which is just to the client. The state should clarify and expand what this provision means. Lives and property depend upon it. As a fourth step, the Texas Legislature should require certain information be provided in all real estate transactions. At the least, the flooding history of the property that is the subject of the sale should be clearly set out in writing. Such disclosure must also state whether or not the property is in either the 100- or 500-year floodplain; whether or not the property is in a hurricane evacuation zone; and certainly should indicate whether or not such property is in the flood pool of a reservoir such as Addicks or Barker. Further disclosure should be provided regarding the accessibility of the property during severe flood events.

Local Government

Many of the issues associated with flooding originate in local policies of either the county or the city. These entities have the greatest involvement in our flooding problems and can do the most to alter our flooding situation. At its core, our flooding problem is a local problem. We have to get this right, and doing so starts now at the local level. Here are some thoughts for county and city action.

Harris County

Harris County is at the center of the flooding issues within our community. The Harris County Flood Control District (HCFCD) and the county engineer’s office are omnipresent on flood control issues within the county, as are the county commissioners and the county judge. Harris County needs to become more transparent on flooding issues. For too long, Harris County has focused on those who are yet to come rather than on those who live here now. New growth and development can no longer be subsidized by harming existing development, as it has in the recent past, including Harvey. Our flooding on Brays, Buffalo, White Oak, and Cypress Creeks has been worsened by our failure to control the downstream impacts of upstream development, which essentially subsidizes new development upstream. That policy and that attitude must change.

First, the 100-year flood and floodplain for Harris County must be altered to reflect recent changes in rainfall. Whether we call it climate change or weird weather is less important than recognizing and acting upon our changing weather patterns. Tropical Storm Allison was labeled “Off the Charts” by HCFCD, only to be followed by 500-year floods in 2012, 2015, 2016, and 2017 and several more larger than a 100-year event in the last 25 years, yet we persist in keeping our current level, which is obsolete—as are all structures built to this standard and all hazardous waste sites protected to that standard. Our homes and our health are at risk here. And along these same lines, Harris County should either cease its mapping of the 100-year floodplain for FEMA or it should require any engineering firm doing such work to have no ties to any developer. They should either work for the county

or the development community, but not both. Further, no additional map changes such as allowed by the Letter of Map Revision (LOMR) and Letter of Map Amendment (LOMA)⁵ processes should be allowed. Period.

Second, HCFCD identified a reservoir as Alternative 5 in a study of the Cypress Creek-Addicks Reservoir watershed. That alternative would have relieved much of the pressure on the Addicks Reservoir and potentially lessened—if not avoided—the problem downstream if not upstream of Addicks Reservoir. That reservoir must be constructed as soon as possible. Harris County Judge Ed Emmett has discussed proposing a bond issue. This reservoir should be a specific item on that bond issue. Further, a new reservoir on Cypress Creek should also be carefully evaluated and funded if it provides significant relief to flooding downstream on Cypress Creek.

Third, the county should pursue buyouts as soon as possible. In addition to FEMA money for buyouts, Harris County should include a specific item on the proposed bond issue for buyouts both within and outside the City of Houston; at least \$1 billion is required. These buyouts should be spread among all watersheds and should be on a willing buyer and willing seller basis. Implicit in such a buyout program is the fact that many homes in our region have flooded multiple times and are unlikely to be offered significant protection in the future due to the current development pattern of the watershed and the difficulty of implementing alternative protection strategies. There should be absolute transparency about the rules and criteria for such a buyout, and the county should maintain a watershed-by-watershed map showing past and proposed buyout areas.

Fourth, Harris County should create the best flood warning system in the United States. The Texas Medical Center has developed a state-of-the-art system with private capital. Harris County has the ability to create and implement this system. For some reason, the internal information that the HCFCD possesses is not readily available to the public in an easily understandable format. Every homeowner and resident in every watershed should be able to go to a website and be advised of current bayou flows, radar imagery, and the projected rise of water levels so that residents can make decisions about whether or when to leave their homes. Implicit in such a warning system is the recognition that we likely will flood in the future—an important point for us all to remember. Too often we pretend that we have this flooding problem under “control” when nothing could be further from the truth.

Fifth, the worst flood—the surge flooding associated with a Category 5 storm coming ashore on the south end of Galveston Island near San Luis Pass—has not yet occurred. It will surpass Harvey. It will be among the worst disasters in United States history, both from the perspective of property damage and lives lost and from the perspective of environmental damage due to spills of oil and hazardous substances along the Houston

⁵ “Letter of Map Amendment & Letter of Map Revision-Based on Fill Process,” Federal Emergency Management Agency, <https://www.fema.gov/letter-map-amendment-letter-map-revision-based-fill-process>.

The Role of Public and Private Stakeholders in “Solving” Houston’s Flooding Problem

Ship Channel. A proposal called the “mid-bay alternative” has been developed by the SSPEED Center at Rice that offers a very high level of protection and is much less expensive than the Ike Dike that may or may not ever be built. Harris County should submit a permit application to build the mid-bay alternative and stand ready to fund its construction when permitted if the federal government has not funded the Ike Dike by that time. This is an inexpensive insurance policy that our county should purchase.

These suggested policies are not meant to be overly critical of existing officials. I believe that we all should look beyond what was done in the past. But we have to change some things and we have to act now. Our existing officials should roll their sleeves up and get to work. And if they don’t, we should elect officials who will.

City of Houston

Historically, the City of Houston has left most major flood protection and flood management decision-making to Harris County. This policy has not served the city well. In the future, the City of Houston should take an active role in county flood work and must fight to protect the homes and businesses within the city limits. This can be done in several ways. But it must be done.

First, the City of Houston should work with Harris County on the creation of a buyout fund. Depending upon the amount of the buyout that is pursued by Harris County and FEMA, the City of Houston should stand ready to supplement such a fund with city funding. The city has a significant problem with recurrent flooding of certain areas and properties. Those properties should be clearly identified and the city should utilize its full power to assist in securing adequate and equitable buyout funding.

Second, the current 100-year floodplain is obsolete. Rebuilding to this standard helps no one. At the least, the City of Houston should adopt the 500-year floodplain as an interim development standard until new maps using realistic rainfall amounts can be prepared. Additionally, the City should develop flood-proofing guidance for those who are rebuilding within current 100-year floodplains. These houses will flood again. To the extent that guidance exists on ways to rebuild that are compatible with inundation, those who are rebuilding should be able to obtain such information from the city.

Third, the city should work with Harris County on the development of a flood warning system for Houston, if not the county as a whole. The City of Houston also should develop an informational app for cell phones that gives up-to-the-minute information about roads and their current flood condition, routes that are less likely to be flooded, and other useful information. Citizens of Houston should not die because they drive into flooded intersections. Barriers should restrict the worst of these intersections during certain rain events. It will be to our benefit in the future to have a city full of citizens who understand how to navigate Houston during a flood.

Fourth, the City of Houston should develop its own subdivision plat approval regulations relative to storm water controls and detention pond design for the extraterritorial

jurisdiction areas in the unincorporated areas of Harris County. Although many of our watersheds are almost fully developed, others are not. Harris County’s regulations are weaker than adjacent Fort Bend County. The Fort Bend County regulations should be adopted and implemented if Harris County refuses to make such changes.

Fifth, the City of Houston should adopt new rules relating to the redevelopment of currently developed areas within the city. Many, if not most, of these existing developed areas do not have adequate storm water detention integrated into their drainage planning. To the extent possible, these “grandfathered” facilities should be subject to stricter controls requiring various types of water detention. Bladders can be installed in basement areas for storm water storage. Lawns and landscaping can be designed to hold and infiltrate rainwater into our soil. These things can and should be done.

Finally, the city should review its building code with an eye toward flood-proofing our buildings. No commercial structure should be allowed to have critical electrical, heating, and cooling infrastructure in the basement. Basements in Houston flood. Further, flood-proofing should be integrated into all new high-rise structures for any areas below ground level. These things are not that difficult. The Texas Medical Center learned these lessons years ago. So now should the City of Houston.

Conclusion

Houston, Harris County, and our region have much work to do in order to take charge of the future course of the city. Both the private sector and the public sector have critical roles in making sure we do what is necessary to choose the path to a successful future for all of us. The ideas set out in this document are one person’s view of what needs to be done. I hope all readers will consider this document as a starting point of a discussion. I hope that our current elected officials will take this in the spirit in which it is offered—a call to action. But we must act. We simply cannot continue doing things the way we have been doing them.